Remarks

I. Introduction

This is in response to the Office Action dated January 6, 2005. The Office Action rejected claims 1-6, 15, 18-23, and 32 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,014,697 to Lewis et al. (Lewis). Claims 7-10, 12-14, 24-27, 29-31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lewis in view of U.S. Patent No. 6,363,056 to Beigi et al. (Beigi). Claims 11 and 28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lewis in view of Beigi and further in view of U.S. Patent No. 6,728,214 to Hao et al. (Hao). Claims 16 and 33 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lewis in view of Hao. Claims 17 and 34 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lewis in view of U.S. Patent No. 5,737,525 to Picazo, Jr. et al. (Picazo).

II. Rejections under 35 U.S.C. §102

Claims 1-6, 15, 18-23, and 32 were rejected under 35 U.S.C. §102(e) as being anticipated by Lewis. In order for a claim to be anticipated under 35 U.S.C. §102, **each and every** limitation of the claim must be found either expressly or inherently in a single prior art reference. PIN/NIP, Inc. v. Platte Chem. Co., 304 F.3d 1235, 1243 (Fed. Cir. 2002). In the present case, Lewis does not show each and every limitation of claims 1-6, 15, 18-23, and 32. Therefore, Applicants request the withdrawal of the rejection under 35 U.S.C. §102(e).

Independent claim 1 is directed to a computer readable medium containing executable program instructions for performing a method on a computer connected to a network. Claim 1 specifically contains the limitations of:

> constructing a data model of a packet switched network from the network topology information and network traffic demand information wherein the data model further comprises data objects for network nodes, network links, and for network traffic demands; and
>
> constructing a routing model wherein the data objects for network nodes, network links, and for network traffic demands are utilized to simulate network traffic in the packet switched network.

Thus, the claim requires a data model comprising data objects for network nodes, network links, and for network traffic demands and a routing model utilizing the data objects to simulate network traffic.

Lewis does not disclose each and every element of claim 1 and therefore claim 1 is not anticipated under 35 U.S.C. §102(e). Lewis discloses, in col. 2, lines 23-27, "a 'virtual network,' namely a software representation of the network being managed, including models that represent the devices (hubs, routers, workstations) and other entities (cables, buildings, etc.) associated with the network, and relations between the models. Each model includes a number of attributes ... the attributes are data which define the characteristics and status of the network entity being modeled." Lewis also discloses, in col. 4, lines 22-29, that other information, such as network traffic information, can be extracted from the network to populate a simulation tool database.

Lewis therefore uses software to model network devices and other entities, such as cables and buildings, associated with the network. Lewis also discloses extracting network traffic information from the network. Lewis does not, however, disclose two models, where one model (the data model) includes data objects for network traffic demands, and the other model (the routing model) using the data objects from the first model to simulate network traffic. As a specific example, Lewis does not disclose creating a data object for network traffic demand, instead only disclosing modeling the devices, other entities associated with the network, and relations between the models. These distinctions render Lewis unable to anticipate claim 1 under §102.

Independent claim 18 is allowable for the reasons discussed above in conjunction with claim 1.

Dependent claims 3 and 20 contain the limitation that the network topology information is derived from data extracted from router configuration files. Lewis discloses, at col. 4, lines 15-24, representing routers using models but does not disclose deriving network topology information from data extracted from router configuration files. Specifically, Lewis does not disclose router

configuration files. Therefore, dependent claims 3 and 20 are allowable for the reasons discussed above in connection with claims 1 and 18, respectively.

Dependent claims 4 and 21 contain the limitation that the data is extracted utilizing end-to-end query mechanisms. Lewis discloses, at col. 3, lines 25-33, a list of segments, outlet nodes, and endpoint nodes, and their descriptive information to convey the topology information about the network to a simulation tool database. Lewis does not, however, disclose using end-to-end query mechanisms to extract data for the network topology information. In particular, Lewis does not disclose querying or query mechanisms. Therefore, dependent claims 4 and 21 are allowable for the reasons discussed above in connection with claims 1 and 18, respectively.

Dependent claims 2, 5, 15, 19, 22, and 32 are also allowable for the reasons stated above and because they depend from allowable independent claims 1 and 18, respectively.

III. Rejections under 35 U.S.C. §103

Claims 7-10, 12-14, 24-27, and 29-31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lewis in view of Beigi. None of the cited references, either alone or in combination, disclose Applicants' invention.

Dependent claims 7 and 24 contain the limitation that the network traffic demand is derived from data extracted from traffic measurements collected at ingress routers. Further, dependent claims 8 and 25 contain the limitation that the traffic measurements are made between an ingress link and a set of egress links.

As the Office Action admits, Lewis does not teach traffic measurements collected at ingress routers. The Office Action also admits that Lewis does not teach traffic measurements made between an ingress link and a set of egress links.

Beigi fails to cure the deficiencies of Lewis. Beigi is directed to continuous monitoring of network performance. Beigi discloses, at col. 3, lines 5-11, a method for providing bandwidth measurement between an ingress and an egress

access router in a network. Beigi does not, however, disclose constructing a model of a packet-switched network. Further, Beigi does not disclose a model having data objects for network nodes, network links, and for network traffic demands. Therefore, because Beigi does not disclose any type of modeling, there is no motivation to combine Beigi with Lewis. Thus, dependent claims 7, 8, 24, and 25 are allowable for the reasons discussed above in connection with claims 1 and 18, respectively.

Dependent claims 9, 10, 12-14, 26, 27, 29-31 are also allowable for the reasons stated above and because they depend from allowable independent claims 1 and 18, respectively.

Dependent claims 16 and 33 contain the limitation that the routing model simulates the OSPF routing protocol. The Office Action admits that Lewis does not teach the OSPF routing protocol.

Hao fails to cure the deficiencies of Lewis. Hao is directed to a network router being tested for operation according to a given network protocol by coupling the router under test (RUT) to a test host device and arranging the device to simulate operative test network topologies. Hao discloses, at col. 2, lines 12-15, that the RUT is configured to simulate a network having at most a given number of router nodes and at most a given number of network nodes. Moreover, Hao discloses, at col. 3, lines 40-57, generating mathematical models of IP network topologies. For example, Hao discloses a network topology being represented by a weighted graph or a directed graph. Hao also discloses, in col. 3, lines 51-57, that the topology is modeled as a weighted bipartite graph and this model is used for OSPF protocol testing. Hao does not, however, disclose a model including data objects for network nodes, network links, and for network traffic demands. Therefore, there is no motivation to combine Hao with Lewis. Thus, dependent claims 16 and 33 are allowable for the reasons discussed above in connection with claims 1 and 18, respectively.

Dependent claims 17 and 34 contain the limitation that the routing model simulates the IS-IS routing protocol. The Office Action admits that Lewis does not disclose the IS-IS routing protocol.

Picazo fails to cure the deficiencies of Lewis. Picazo is directed to a packet switching machine having a shared high-speed memory with multiple ports. Picazo discloses, at col. 17, lines 45-59, that there are two types of routing protocols, and that large networks generally use data link-state protocol exemplified by the IS-IS routing protocol of the OSI model. Picazo does not, however, disclose a data object for network nodes, network links, and for network traffic demands. Therefore, there is no motivation to combine Picazo with Lewis. Thus, dependent claims 17 and 34 are allowable for the reasons discussed above in connection with claims 1 and 18, respectively.

IV. Conclusion

For the reasons discussed above, all pending claims are allowable over the cited art. Reconsideration and allowance of all claims is respectfully requested.

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